CLAIMS

1. An antenna device for a portable radio communication device operable in at least a first and a second frequency band, the antenna device comprising:

- a first electrically conductive radiating element (10; 10'; 10''; 110) having a feeding portion (12; 112) connectable to a feed device (RF) of the radio communication device;

- a second electrically conductive radiating element (20; 20'; 20''; 120) having a grounding portion (22; 122) connectable to ground;

- a controllable switch (30; 130) arranged between the first and second radiating elements for selectively interconnecting and disconnecting the radiating elements, the state of the switch being controlled by means of a control voltage input (V_{Switch});

- a first filter (16; 116) arranged between the feeding portion (12; 112) and the control voltage input(V_{Switch}), wherein the first filter is arranged to block radio frequency signals,

characterized by

- a high pass filter (32; 132) connected between said first and second radiating elements, which high pass filter allows RF signals to pass;

- wherein said first and second radiating element are generally planar and arranged at a predetermined distance above a ground plane (70).

2. The antenna device according to claim 1, wherein the controllable switch (30; 130) comprises a PIN diode.

3. The antenna device according to claim 1 or 2, wherein the first filter (16; 116) is a low pass filter.

4. The antenna device according to claim 1, 2, or 3, wherein the second radiating element (20) is connected directly to ground.

5. The antenna device according to any of claims 1-4, wherein the first and second radiating elements (10, 20; 110, 120) together with the high pass filter (32; 132) have a general C-shape.

6. The antenna device according to any of claims 1-5, wherein the high pass filter (32) comprises a conductive sheet (34) provided under part of the two radiating elements (10, 20).

7. The antenna device according to claim 6, comprising a multi-layer flex film wherein the radiating elements (10, 20) are provided on one side of the flex film and the conductive sheet (34) is provided on the other side of the flex film.

8. The antenna device according to any of claims 1-5, wherein the high pass filter (32) comprises a meandering interface between the first and second radiating elements ((10', 20').

9. The antenna device according to any of claims 1-8, comprising a third radiating element (140)

together with a second control input ($V_{switch2}$) connected to the third radiating element via a low pass filter (142), wherein the third radiating element is connected to the second radiating element 120 by means of a second switch (144), and further comprising a second grounding portion (114) arranged on the first radiating element (110) which is connected to ground via a second high pass filter (118) blocking DC signals, and a low pass filter (124) arranged between the second radiating element (120) and ground.

10. A portable radio communication device, comprising a generally planar printed circuit board and an antenna device connected to a feed device (RF) with electronic circuits provided for transmitting and/or receiving RF signals, and a ground device, wherein the antenna device comprises:

- a first electrically conductive radiating element (10; 10'; 10''; 110) having a feeding portion (12; 112) connectable to a feed device (RF) of the radio communication device;

- a second electrically conductive radiating element (20; 20'; 20''; 120) having a grounding portion (22; 122) connectable to ground;

- a controllable switch (30; 130) arranged between the first and second radiating elements for selectively interconnecting and disconnecting the radiating elements, the state of the switch being controlled by means of a control voltage input (V_{Switch});

- a first filter (16; 116) arranged between the feeding portion (12; 112) and the control voltage input(V_{Switch}), wherein the first filter is arranged to block radio frequency signals,

characterized by

- a high pass filter connected between said first and second radiating elements, which high pass filter allows RF signals to pass;

- wherein said first and second radiating element are generally planar and arranged at a predetermined distance above a ground plane.

11. The portable radio communication device according to claim 10, wherein

- the communication device is a foldable phone;

- a control voltage applied to the control voltage input (V_{Switch}) is low when the communication device is folded; and

- the control voltage applied to the control voltage input (V_{Switch}) is high when the communication device is unfolded;

- whereby the antenna device operates as a dual band antenna with essentially constant resonance frequencies irrespective of the operating mode of the communication device.

12. The portable radio communication device according to claim 10, wherein

- a control voltage applied to the control voltage input (V_{Switch}) is low when the communication device operates in a transmit mode; and

- the control voltage applied to the control voltage input (V_{Switch}) is high when the communication device operates in a receive mode.